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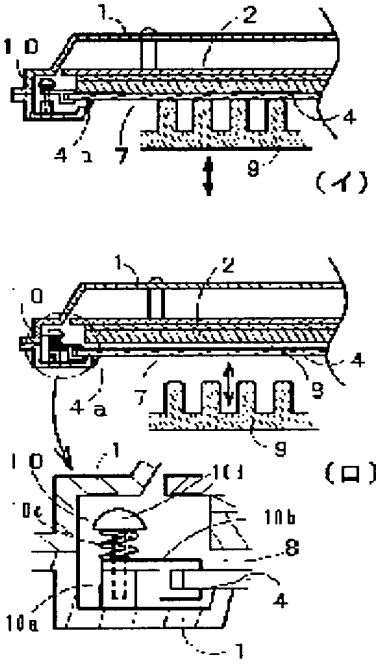
(54) PLASMA DISPLAY DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To prevent a plasma display device from being damaged in the case the device is inadvertently dropped while the device is in a packaged condition.
SOLUTION: A plasma display panel(PDP) 2 that displays video is covered by a casing 1 having a front surface opening 7. Transparent protective materials 4 are arranged with a gap 8 at the positions that abut on the peripheral section of the opening 7 in parallel with the display surface of the PDP 2. During transportation and in storage, a front surface protecting member 9 is pressed against the material 4 and the entire casing 1 is packaged with other packaging materials and the material 4 is stably located at a second position abutting on the display surface of the PDP 2 by shrinking the pressing portions of an elastic mounting device 10. Moreover, when the package is opened and the member 9 is removed, the material 4 is stably located at a first position abutting on the peripheral section of the opening 7 by expanding the pressing portion of the device 10.



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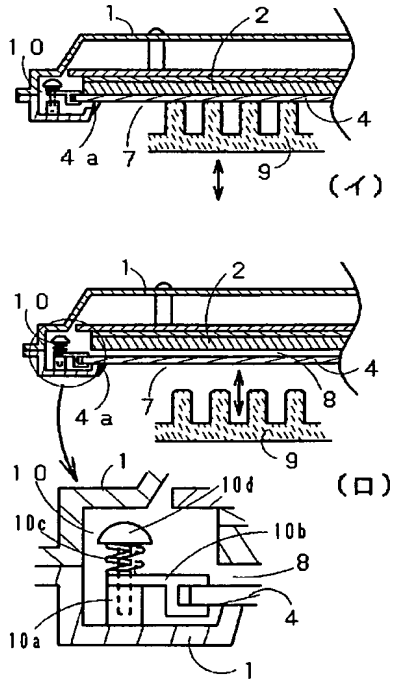
EE13 GG11 GG42 HH05 HH18

(54)【発明の名称】　プラズマディスプレイ装置

(57)【要約】
【課題】　梱包状態での落下事故で破損し難くする。
【解決手段】　映像を表示するプラズマディスプレイパネル（ＰＤＰ）２を前面開口７を備えた筐体１で被覆するとともに、透明な保護材４を前記ＰＤＰ２の表示面と平行に空間８を隔てて前記前面開口７の周縁部に当接する位置に設置し、運搬や、保管時には、前面保護部材９を前記保護材４に押圧し、他の梱包材とともに筐体１全体を梱包するので、前記保護材４は、弾性取付け装置１０の付勢部分が縮むことにより前記ＰＤＰ２の表示面に当接する第二位置に安定する。また、梱包を開き前記前面保護部材９を取り除くと、前記保護材４は、弾性取付け装置１０の付勢部分が伸長することにより前面開口７の周縁部に当接する第一位置に安定する。



1

【特許請求の範囲】

【請求項１】　映像を表示するプラズマディスプレイパネルを前面開口を備えた筐体で被覆するとともに、透明な保護材を前記プラズマディスプレイパネルの表示面と平行に空間を隔てて前記前面開口の周縁部に当接する位置に設置したプラズマディスプレイ装置において、
前記保護材を、前記筐体の前面開口の内側周縁部付近に設けた複数の弾性取付け装置を介して、表示面と平行の前面開口の周縁部に当接する第一位置と、前記プラズマディスプレイパネルの表示面に当接する第二位置との何れも選択できるように配設したことを特徴とするプラズマディスプレイ装置。

【請求項２】　前記弾性取付け装置を、前記筐体の前面開口の内側周縁付近に垂設したボスと、一端で前記保護材の縁部を支持し他端に挿通孔を備える支持具と、前記ボスに前記支持具を弾性部材で付勢して取付けるボルトとで構成した請求項１記載のプラズマディスプレイ装置。

【請求項３】　前記弾性部材をコイルバネで構成した請求項２記載のプラズマディスプレイ装置。

【請求項４】　前記保護材を、前記筐体の前面開口の内側周縁付近に設けた弾性部材で支持して表示面と平行の前面開口の周縁部に当接する前記第一位置と、前記プラズマディスプレイパネルの表示面に当接する第二位置との何れも選択できるように配設したことを特徴とする請求項１記載のプラズマディスプレイ装置。

【請求項５】　前記保護材を、前記筐体の前面開口の内側周縁付近に設けた前記筐体の前後方向を縦方向として縦断面ほぼＪ字状で下部のほぼＵ字部分の一側に横方向の溝を設けて前記保護材の縁部を支持すると共に、他側に横方向の凹溝を縦方向に所定間隔で複数個並べ、Ｊ字の上部を前記筐体背部に設けた挿通孔に挿通した弾性取付け具と、前記筐体の側面内側の前記弾性取付け具の設置位置で前記凹溝の相応する位置に横方向の凸条を縦方向に所定間隔で複数個並べた係止板とを用いて表示面と平行の前面開口の周縁部に当接する前記第一位置と、前記プラズマディスプレイパネルの表示面に当接する第二位置との何れも選択できるように配設する請求項１記載のプラズマディスプレイ装置。

【請求項６】　前記保護材の前面に前記筐体の前面開口の周縁に沿ってほぼ一周する弾性部材製の壁を垂設し、前記保護材が前記プラズマディスプレイパネルに当接する前記第二位置において前記壁が前面開口の周縁側部に当接する請求項１記載のプラズマディスプレイ装置。

【請求項７】　映像を表示するプラズマディスプレイパネルを前面開口を備えた筐体で被覆するとともに、透明な保護材を前記プラズマディスプレイパネルの表示面と平行に空間を隔てて前記前面開口の周縁部に当接する位置に設置したプラズマディスプレイ装置において、
前記筐体の側面に前記空間に通じる挿通孔を設け、緩衝材を前記挿通孔を経由して前記保護材と、前記プラズマディスプレイパネルの間に挿入して装着することを特徴とするプラズマディスプレイ装置。

2

【請求項８】　前記挿通孔を経由して緩衝材を挿入する通路の案内装置として、前記挿通孔と前記筐体の前面開口の間の第一位置と、前記前面開口の中心に関する点対称の第二位置とに、前記挿通孔の幅に略等しい間隔で夫々１組の突起を垂設した請求項７記載のプラズマディスプレイ装置。

【請求項９】　前記挿通孔に開閉扉を設けた請求項７記載のプラズマディスプレイ装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、プラズマディスプレイパネル（ＰＤＰ）等の平面型表示装置を筐体へ取付ける技術に係り、詳細には強化ガラス製等の保護材と筐体とを弾性的に結合することにより、保護材と筐体とを密着できる構造に関する。

【０００２】

【従来の技術】図４は、従来のＰＤＰの一実施例を示す、要部正面図（イ）、（イ）図のＡ－Ａ’矢視による側断面図（ロ）である。図４（イ）、（ロ）を参照して説明する。プラズマディスプレイパネル（ＰＤＰ）２の裏面に、例えば、アルミ製の補強板であるフレーム３を貼付等して設け、前記フレーム３の背面に複数の突起５を立設し、前記ＰＤＰ２を被覆する筐体１に前記突起５を固定してプラズマディスプレイ装置６が組立てる。筐体１の前面開口７の内側で、前記ＰＤＰ２の表示面の前方に約５㎜の空間８を隔てて強化ガラス製等の光学フィルタ４を備える。

【０００３】図５は、従来のＰＤＰの梱包状態における落下の衝撃による破損を説明するイメージ図である。従来の筐体１にＰＤＰ２を固定する保持方法は、通常使用時に光学フィルタ４に加わる外部、例えば、光学フィルタ４に物を衝突させる等した衝撃からＰＤＰ２を保護するために、約５㎜の空間８を設けてある。そのため、ＰＤＰ２の前方には前記約５㎜の空間８があるだけで一切の支持物が無く、運搬時に梱包状態の筐体１を前面開口７を下向きに落下させる事故があると、前記ＰＤＰ２が矢印Ａの方向に撓むため、ＰＤＰ２の中央付近等が光学フィルタ４に衝突し、ＰＤＰ２の表示面の前面ガラスが破損する恐れがあった。

【０００４】

【発明が解決しようとする課題】本発明は上記問題点に鑑みなされたもので、梱包状態における落下等の事故の衝撃によっても破損し難いプラズマディスプレイ装置を提供することを目的としている。

【０００５】

【課題を解決するための手段】本発明は上述の課題を解決するため、本発明は次の構成とした。映像を表示する

プラズマディスプレイパネルを前面開口を備えた筐体で被覆するとともに、透明な保護材を前記プラズマディスプレイパネルの表示面と平行に空間を隔てて前記前面開口の周縁部に当接する位置に設置したプラズマディスプレイ装置において、前記保護材を、前記筐体の前面開口の内側周縁部付近に設けた複数の弾性取付け装置を介して、表示面と平行の前面開口の周縁部に当接する前記第一位置と、前記プラズマディスプレイパネルの表示面に当接する第二位置との何れも選択できるように配設した。

【０００６】また、前記弾性取付け装置を、前記筐体の前面開口の内側周縁付近に垂設したボスと、一端で前記保護材の縁部を支持し他端に挿通孔を備える支持具と、前記ボスに前記支持具を弾性部材で付勢して取付けるボルトとで構成した。

【０００７】また、前記弾性部材をコイルバネで構成した。

【０００８】また、前記保護材を、前記筐体の前面開口の内側周縁付近に設けた弾性部材で支持して表示面と平行の前面開口の周縁部に当接する前記第一位置と、前記プラズマディスプレイパネルの表示面に当接する第二位置との何れも選択できるように配設した。

【０００９】また、前記保護材を、前記筐体の前面開口の内側周縁付近に設けた前記筐体の前後方向を縦方向として縦断面ほぼＪ字状で下部のほぼＵ字部分の一側に横方向の溝を設けて前記保護材の縁部を支持すると共に、他側に横方向の凹溝を縦方向に所定間隔で複数個並べ、Ｊ字の上部を前記筐体背部に設けた挿通孔に挿通した弾性取付け具と、前記筐体の側面内側の前記弾性取付け具の設置位置で前記凹溝の相応する位置に横方向の凸条を縦方向に所定間隔で複数個並べた係止板とを用いて表示面と平行の前面開口の周縁部に当接する前記第一位置と、前記プラズマディスプレイパネルの表示面に当接する第二位置との何れも選択できるように配設するように構成した。

【００１０】また、前記保護材の前面に前記筐体の前面開口の周縁に沿ってほぼ一周する弾性部材製の壁を垂設し、前記保護材が前記プラズマディスプレイパネルに当接する前記第二位置において前記壁が前面開口の周縁側部に当接するように構成した。

【００１１】また、映像を表示するプラズマディスプレイパネルを前面開口を備えた筐体で被覆するとともに、透明な保護材を前記プラズマディスプレイパネルの表示面と平行に空間を隔てて前記前面開口の周縁部に当接する位置に設置したプラズマディスプレイ装置において、前記筐体の側面に前記空間に通じる挿通孔を設け、緩衝材を前記挿通孔を経由して前記保護材と、前記プラズマディスプレイパネルの間に挿入して装着するように構成した。

【００１２】また、前記挿通孔を経由して緩衝材を挿入する通路の案内装置として、前記挿通孔と前記筐体の前面開口の間の第一位置と、前記前面開口の中心に関する点対称の第二位置とに、前記挿通孔の幅に略等しい間隔で夫々１組の突起を垂設した。

【００１３】また、前記挿通孔に開閉扉を設けた。

【００１４】

【発明の実施の形態】以下、図面に基づいて本発明によるプラズマディスプレイ装置を詳細に説明する。図１は、本発明によるプラズマディスプレイ装置の一実施例を示す要部断面図及び要部拡大図であり、保護材を表示面に当接する第二位置に配置している状態（イ）、保護材を前面開口の周縁部に当接する第一位置に配置している状態及び弾性取付け装置を示す要部拡大図（ロ）である。

【００１５】図１を参照して以下説明する。映像を表示するプラズマディスプレイパネル（ＰＤＰ）２を前面開口７を備えた筐体１で被覆するとともに、透明な保護材、例えば、強化ガラス製等の光学フィルタ４など、を前記ＰＤＰ２の表示面と平行に空間８を隔てて前記前面開口７の周縁部に当接する位置に設置し、運搬や、保管時には図１（イ）に示すように、前面保護部材９を前記光学フィルタ（保護材）４に押圧し、他の梱包材とともに筐体１全体を梱包するので、光学フィルタ４は、弾性取付け装置１０の付勢部分が縮むことにより前記ＰＤＰ２の表示面に当接する第二位置に安定する。また、図１（ロ）第一位置に配置している状態に示すように、梱包を開き前記前面保護部材９を取り除くと、光学フィルタ４は、図１（ロ）要部拡大図に示すように、弾性取付け装置１０の付勢部分が伸長することにより前面開口７の周縁部に当接する第一位置に安定する。

【００１６】図１（ロ）要部拡大図に示す弾性取付け装置１０について説明する。弾性取付け装置１０を、筐体１の前面開口７の内側周縁付近に垂設したボス１０ａと、一端で光学フィルタ４の縁部を支持し他端に挿通孔を備える支持具１０ｂと、前記ボス１０ａに前記支持具１０ｂを弾性部材１０ｃで付勢して取付けるボルト１０ｄとで構成したので、上述の第二位置は光学フィルタ４が前面保護部材９で押圧される力が支持具１０ｂ、弾性部材１０ｃに伝達し、この弾性部材１０ｃがボルト１０ｄと支持具１０ｂの間にあって前記力により圧縮され縮むことにより実現できる。また、上述の第一位置は光学フィルタ４が前面保護部材９で押圧される力が取り除かれ、前記弾性部材１０ｃが伸長し、支持具１０ｂが前記弾性部材１０ｃから付勢されて前方に移動するので、この支持具１０ｂで支持されている光学フィルタ４が前面開口７の周縁部に当接する位置で安定して実現できる。尚、弾性取付け装置１０は、前面開口７の周縁部に複数個設けてあり、弾性部材１０ｃは、例えば、コイルバネ等で構成できる。

【００１７】また、前記光学フィルタ４の前面に筐体１

の前面開口７の周縁に沿ってほぼ一周する弾性部材製の壁４ａを垂設し、前記光学フィルタ４が前記ＰＤＰ２に当接する前記第二位置において前記壁４ａが前面開口７の周縁側部に当接するようにできるので、輸送中や保管中に埃等の侵入を防止できる。

【００１８】図２は、本発明によるプラズマディスプレイ装置の第二の実施例を示す要部断面図（イ）及び、第三の実施例を示す要部断面図（ロ）である。

【００１９】図２（イ）を参照して第二の実施例を説明する。光学フィルタ（保護材）４を、筐体１の前面開口７の内側周縁付近に設けた弾性部材２０、例えば、複数のゴム製の柱、１個のゴム製のリング等、で支持して表示面と平行の前面開口７の周縁部に当接する第一位置に取付け、光学フィルタ４を図示しない前面保護部材９で押圧することにより前記弾性部材２０が伸長するので前記ＰＤＰ２の表示面に当接する第二位置に安定する。

【００２０】図２（ロ）を参照して第三の実施例を説明する。光学フィルタ（保護材）４を、筐体１の前面開口７の内側周縁付近に設けた前記筐体１の前後方向を縦方向として縦断面ほぼＪ字状で下部のほぼＵ字部分の一側に横方向の溝３０ａを設けて前記光学フィルタ（保護材）４の縁部を支持すると共に、他側に横方向の凹溝３０ｂを縦方向に所定間隔で複数個並べ、Ｊ字の上部３０ｃを前記筐体背部に設けた挿通孔１ａに挿通した弾性取付け具３０と、筐体１の側面内側の前記弾性取付け具３０の設置位置で前記凹溝３０ｂの相応する位置に横方向の凸条３１ａを縦方向に所定間隔で複数個並べた係止板３１とを用いて表示面と平行の前面開口７の周縁部に当接する前記第一位置と、前記プラズマディスプレイパネル２の表示面に当接する第二位置との何れも選択できるように配設する。前面開口７の周縁部に当接する第一位置を選択する場合は、弾性取付け具３０のＪ字の上部３０ｃを前方に押圧することにより、前記弾性取付け具３０のＵ字部分の弾性を利用し前記凹溝３０ｂが係止している相手の前記凸条３１ａを順次前方に変えることにより弾性取付け具３０が前方に移動するので、前記弾性取付け具３０の溝３０ａで支持された光学フィルタ（保護材）４が第一位置に移動できる。

【００２１】また、第二位置を選択する場合は、光学フィルタ４を図示しない前面保護部材９で押圧することにより前記弾性取付け具３０が後方へ移動し、前記ＰＤＰ２の表示面に当接する第二位置に移動できる。尚、前記凹溝３０ｂと前記凸条３１ａの夫々の間隔、位置を第一位置、第二位置で係止するように設定する必要がある。

【００２２】図３は、本発明によるプラズマディスプレイ装置の第四の実施例を示す要部断面図（イ）、平面図（ロ）である。尚、図１と同一個所は同じ符号を附し、重複する説明を省略する。前記筐体１の側面１ｂに前記空間８に通じる挿通孔１ｃを設け、板状の緩衝材４０を前記挿通孔１ｃを経由して前記光学フィルタ４と、前記

ＰＤＰ２の間の空間に挿入して装着する。この発明では、ＰＤＰ２が緩衝材４０で支持されるのでＰＤＰ２が光学フィルタ４に衝突することを防止できる。

【００２３】また、前記挿通孔１ｃを経由して板状の緩衝材４０を挿入する通路４１の案内装置として、前記挿通孔１ｃと前記筐体１の前面開口７の間の第一位置１ｄと、前記前面開口７の中心に関する点対称の第二位置１ｅとの筐体１の内側に、前記挿通孔の幅に略等しい間隔で夫々１組の突起１ｆを垂設したので、前記突起１ｆが案内し左右（横）方向に挿入した緩衝材４０の位置が、例えば、前面開口７の上下（縦）方向の中央位置に安定する。

【００２４】また、前記挿通孔１ｃに開閉扉１ｇを設けたので、緩衝材４０を挿入しない場合の埃等の侵入を防止できる。尚、案内装置を前記筐体１の上下方向とし、緩衝材４０を上下（縦）方向に挿入する実施例は、本実施例と同様の作用、効果を有するものである。

【００２５】

【発明の効果】以上説明したように、本発明は、運搬時に梱包状態の筐体を前面開口を下向きに落下させる事故が発生した場合、ＰＤＰの中央付近等が光学フィルタに衝突し、ＰＤＰの表示面の前面ガラスが破損する恐れを低減したプラズマディスプレイ装置を提供する。従って、従来の運搬時の梱包を簡易で小型化できるなどコスト低廉に寄与できる。

【図面の簡単な説明】

【図１】本発明によるプラズマディスプレイ装置の一実施例を示す要部断面図及び要部拡大図であり、保護材を表示面に当接する第二位置に配置している状態（イ）、保護材を前面開口の周縁部に当接する第一位置に配置している状態及び弾性取付け装置を示す要部拡大図（ロ）である。

【図２】本発明によるプラズマディスプレイ装置の第二の実施例を示す要部断面図（イ）及び、第三の実施例を示す要部断面図（ロ）である。

【図３】本発明によるプラズマディスプレイ装置の第四の実施例を示す要部断面図（イ）、平面図（ロ）である。

【図４】従来のＰＤＰの一実施例を示す、要部正面図（イ）、（イ）図のＡ－Ａ’矢視による側断面図（ロ）である。

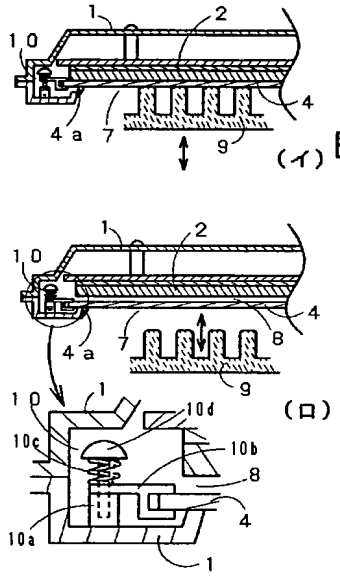
【図５】従来のＰＤＰの梱包状態における落下の衝撃による破損を説明するイメージ図である。

【符号の説明】

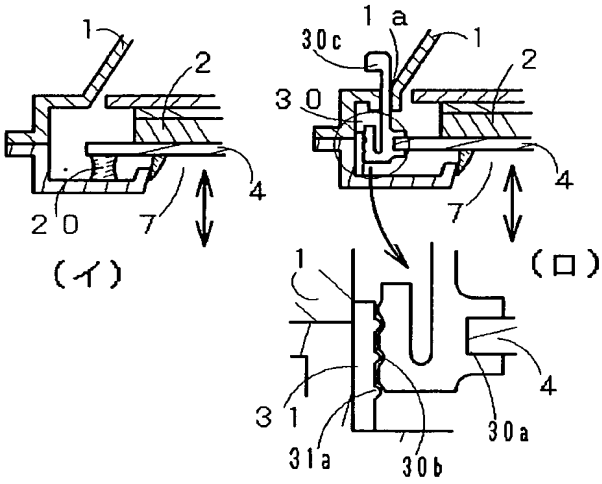
１　筐体
１ａ　挿通孔
１ｂ　側面
１ｃ　挿通孔
１ｄ　第一位置
１ｅ　第二位置

１ｆ　突起
１ｇ　開閉扉
２　プラズマディスプレイパネル（ＰＤＰ）
３　フレーム
４　光学フィルタ（保護材）
５　突起
６　プラズマディスプレイ装置
７　前面開口
８　空間
９　前面保護部材
１０　弾性取付け装置
１０ａ　ボス
１０ｂ　支持具
１０ｃ　弾性部材
１０ｄ　ボルト
２０　弾性部材
３０　弾性取付け具
３０ａ　溝
３０ｂ　凹溝
３０ｃ　Ｊ字の上部
３１　係止板
３１ａ　凸条
４０　緩衝材
４１　通路

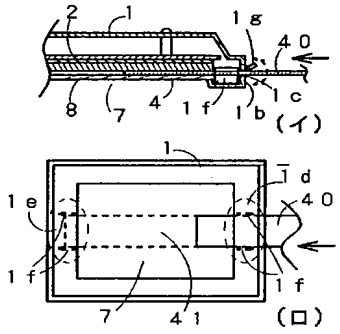
【図１】



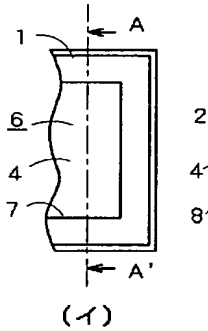
【図２】



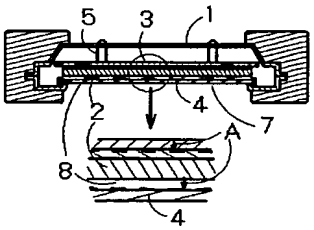
【図３】



【図４】



【図５】



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CLAIMS

[Claim(s)]
[Claim 1] While covering with the case equipped with front opening the plasma display panel which displays an image In the plasma display equipment which installed transparent protection material in the location which separates space to the screen of said plasma display panel, and parallel, and contacts the periphery section of said front opening Two or more elastic anchoring equipments which prepared said protection material near the inside periphery section of front opening of said case are minded. Plasma display equipment characterized by arranging so that all of the first location which contacts the periphery section of front opening parallel to the screen, and the second location which contacts the screen of said plasma display panel can be chosen.
[Claim 2] Plasma display equipment according to claim 1 constituted from a boss who installed said elastic anchoring equipment near the inside periphery of front opening of said case, support which supports the edge of said protection material by the end, and equips the other end with an insertion hole, and a bolt which energizes and attaches said support in said boss by the elastic member.
[Claim 3] Plasma display equipment according to claim 2 which constituted said elastic member from a coil spring.
[Claim 4] Plasma display equipment according to claim 1 characterized by arranging so that all of said first location which supports said protection material by the elastic member prepared near the inside periphery of front opening of said case, and contacts the periphery section of front opening parallel to the screen, and the second location which contacts the screen of said plasma display panel can be chosen.
[Claim 5] While establishing a lateral slot in the 1 side of a lower about U character part by the shape of the longitudinal section of about J characters by making into a lengthwise direction the cross direction of said case which prepared said protection material near the inside periphery of front opening of said case and supporting the edge of said protection material The elastic fixture inserted in the insertion hole which arranged two or more lateral concaves in the lengthwise direction at intervals of predetermined at the side else, and prepared the upper part of J characters back [said / case], Said first location which contacts the location in which said concave ****s in the installation location of said elastic fixture inside [side-face] said case at the periphery section of front opening parallel to the screen using the stop plate which arranged two or more lateral protruding lines in the lengthwise direction at intervals of predetermined, Plasma display equipment according to claim 1 arranged so that all with the second location which contacts the screen of said plasma display panel can be chosen.
[Claim 6] Plasma display equipment according to claim 1 with which said wall contacts the periphery flank of front opening in said second location where the wall made from an elastic member which goes around mostly along the periphery of front opening of said case is installed in the front face of said protection material, and said protection material contacts said plasma display panel.
[Claim 7] While covering with the case equipped with front opening the plasma display panel which displays an image In the plasma display equipment which installed transparent protection material in the location which separates space to the screen of said plasma display panel, and parallel, and contacts the

periphery section of said front opening Plasma display equipment characterized by preparing the insertion hole which leads to said space in the side face of said case, and inserting and equipping with shock absorbing material between said plasma display panels with said protection material via said insertion hole.

[Claim 8] Plasma display equipment according to claim 7 which abbreviation's was in the width of face of said insertion hole by carrying out, and installed 1 set of projections in said insertion hole, the first location between front openings of said case, and the second location of the point symmetry about the core of said front opening at spacing, respectively as a guide apparatus of the path which inserts shock absorbing material via said insertion hole.

[Claim 9] Plasma display equipment according to claim 7 which prepared the closing motion door in said insertion hole.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the technique of attaching flat-surface mold displays, such as a plasma display panel (PDP), in a case, and relates to the structure where protection material and a case can be stuck, by combining elastically protection material and cases, such as a product made from tempered glass, with a detail.
[0002]
[Description of the Prior Art] Drawing 4 is sectional side elevation (b) by the A-A' view of an important section front view (b) and (b) Fig. which shows one example of the conventional PDP. It explains with reference to drawing 4 (b) and (b). At the rear face of a plasma display panel (PDP) 2, pasting etc. prepares by carrying out the frame 3 which is the back up plate made from aluminum, two or more projections 5 are set up at the tooth back of said frame 3, said projection 5 is fixed to the case 1 which covers said PDP2, and plasma display equipment 6 assembles. By the inside of the front opening 7 of a case 1, about 5mm space 8 is separated ahead of said screen of PDP2, and it has the light filters 4, such as a product made from tempered glass.
[0003] Drawing 5 is an image Fig. explaining breakage by the impact of the fall in the packing condition of the conventional PDP. The maintenance approach which fixes PDP2 to the conventional case 1 has formed about 5mm space 8, in order to protect PDP2 from the impact made [make / an object / collide etc.] into the exterior 4 which usually joins a light filter 4 at the time of use, for example, a light filter. Therefore, there was none of all the support only by said about 5mm space 8 being ahead of PDP2, and if there was accident which drops the front opening 7 downward at the time of conveyance in the case 1 of a packing condition, since said PDP2 would bend in the direction of an arrow head A, near the center of PDP2 etc. collided with the light filter 4, and there was a possibility that the front windshield of the screen of PDP2 might be damaged.
[0004]
[Problem(s) to be Solved by the Invention] This invention was made in view of the above-mentioned trouble, and aims at offering the plasma display equipment which is hard to damage also by the impact of accident, such as fall in a packing condition.
[0005]
[Means for Solving the Problem] In order that this invention might solve an above-mentioned technical problem, this invention was considered as the next configuration. While covering with the case equipped with front opening the plasma display panel which displays an image In the plasma display equipment which installed transparent protection material in the location which separates space to the screen of said plasma display panel, and parallel, and contacts the periphery section of said front opening It arranged so that all of said first location which contacts the periphery section of front opening parallel to the screen, and the second location which contacts the screen of said plasma display panel could choose said protection material through two or more elastic anchoring equipments formed near the inside periphery section of front opening of said case.

[0006] Moreover, it constituted from a boss who installed said elastic anchoring equipment near the inside periphery of front opening of said case, support which supports the edge of said protection material by the end, and equips the other end with an insertion hole, and a bolt which energizes and attaches said support in said boss by the elastic member.
[0007] Moreover, said elastic member consisted of coil springs.
[0008] Moreover, it arranged so that all of said first location which supports said protection material by the elastic member prepared near the inside periphery of front opening of said case, and contacts the periphery section of front opening parallel to the screen, and the second location which contacts the screen of said plasma display panel could be chosen.
[0009] Moreover, while establishing a lateral slot in the 1 side of a lower about U character part by the shape of the longitudinal section of about J characters by making into a lengthwise direction the cross direction of said case which prepared said protection material near the inside periphery of front opening of said case and supporting the edge of said protection material The elastic fixture inserted in the insertion hole which arranged two or more lateral concaves in the lengthwise direction at intervals of predetermined at the side else, and prepared the upper part of J characters back [said / case], Said first location which contacts the location in which said concave ****s in the installation location of said elastic fixture inside [side-face] said case at the periphery section of front opening parallel to the screen using the stop plate which arranged two or more lateral protruding lines in the lengthwise direction at intervals of predetermined, It constituted so that all with the second location which contacts the screen of said plasma display panel could be chosen and it might arrange.
[0010] Moreover, the wall made from an elastic member which goes around mostly along the periphery of front opening of said case was installed in the front face of said protection material, and it constituted so that said wall might contact the periphery flank of front opening in said second location where said protection material contacts said plasma display panel.
[0011] Moreover, while covering with the case equipped with front opening the plasma display panel which displays an image In the plasma display equipment which installed transparent protection material in the location which separates space to the screen of said plasma display panel, and parallel, and contacts the periphery section of said front opening The insertion hole which leads to said space was prepared in the side face of said case, and it constituted so that it might insert and equip with shock absorbing material between said plasma display panels with said protection material via said insertion hole.
[0012] Moreover, as a guide apparatus of the path which inserts shock absorbing material via said insertion hole, abbreviation etc. was in the width of face of said insertion hole by carrying out, and 1 set of projections were installed in said insertion hole, the first location between front openings of said case, and the second location of the point symmetry about the core of said front opening at spacing, respectively.
[0013] Moreover, the closing motion door was prepared in said insertion hole.
[0014]
[Embodiment of the Invention] Hereafter, based on a drawing, the plasma display equipment by this invention is explained to a detail. Drawing 1 is the important section sectional view and important section enlarged drawing showing one example of the plasma display equipment by this invention, and is important section enlarged drawing (b) which shows condition (b) which arranges protection material in the second location which contacts the screen, the condition which arranges protection material in the first location which contacts the periphery section of front opening, and elastic anchoring equipment.
[0015] With reference to drawing 1 , it explains below. While covering with the case 1 equipped with the front opening 7 the plasma display panel (PDP) 2 which displays an image As the light filters 4, such as the transparent protection material made from tempered glass, for example, a product etc., etc. are installed in the location which separates space 8 to said screen of PDP2 and parallel, and contacts the periphery section of said front opening 7 and it is shown in drawing 1 (b) at the time of conveyance and storage Since the front protection member 9 is pressed to said light filter (protection material) 4 and the case 1 whole is packed up with other packaging, a light filter 4 is stabilized in the second location which

contacts said screen of PDP2, when the energization part of elastic anchoring equipment 10 is shrunken. Moreover, if packing is opened and said front protection member 9 is removed as shown in the condition of arranging in the first location of drawing 1 (b), a light filter 4 will be stabilized in the first location which contacts the periphery section of the front opening 7, when the energization part of elastic anchoring equipment 10 develops, as shown in the drawing 1 (b) important section enlarged drawing.

[0016] The elastic anchoring equipment 10 shown in the drawing 1 (b) important section enlarged drawing is explained. Boss 10a which installed elastic anchoring equipment 10 near the inside periphery of the front opening 7 of a case 1, Since it constituted from support 10b which supports the edge of a light filter 4 by the end, and equips the other end with an insertion hole, and bolt 10d which energizes and attaches said support 10b in said boss 10a by elastic member 10c The force in which a light filter 4 is pressed by the front protection member 9 transmits the second above-mentioned location to support 10b and elastic member 10c, and when bolt 10d and support 10b do, and this elastic member 10c is compressed by said force and shrunken, it can be realized. Moreover, since the force in which a light filter 4 is pressed by the front protection member 9 is removed, said elastic member 10c develops, support 10b is energized from said elastic member 10c and the first above-mentioned location is moved ahead, it can stabilize and realize in the location where the light filter 4 currently supported by this support 10b contacts the periphery section of the front opening 7. In addition, two or more elastic anchoring equipments 10 are formed in the periphery section of the front opening 7, and can constitute elastic member 10c from a coil spring etc.

[0017] Moreover, wall 4a made from an elastic member carried out about 1 round along the periphery of the front opening 7 of a case 1 is installed in the front face of said light filter 4, and since said wall 4a can contact the periphery flank of the front opening 7 in said second location where said light filter 4 contacts said PDP2, invasion of dust etc. can be prevented during transportation and storage.

[0018] Drawing 2 is important section sectional view (b) which shows the second example of the plasma display equipment by this invention, and important section sectional view (b) which shows the third example.

[0019] The second example is explained with reference to drawing 2 (b). The elastic member 20 which formed the light filter (protection material) 4 near the inside periphery of the front opening 7 of a case 1 For example, it attaches in the first location which the column made of two or more rubber, one ring made of rubber, etc. come out and support, and contacts the periphery section of the front opening 7 parallel to the screen. Since said elastic member 20 develops by pressing by the front protection member 9 which does not illustrate a light filter 4, it is stabilized in the second location which contacts said screen of PDP2.

[0020] The third example is explained with reference to drawing 2 (b). While preparing lateral slot 30a in the 1 side of a lower about U character part by the shape of the longitudinal section of about J characters by making into a lengthwise direction the cross direction of said case 1 which formed the light filter (protection material) 4 near the inside periphery of the front opening 7 of a case 1 and supporting the edge of said light filter (protection material) 4 The elastic fixture 30 inserted in insertion hole 1a which arranged two or more lateral concave 30b in the lengthwise direction at intervals of predetermined at the side else, and prepared up of J characters 30c back [said / case], Said first location which contacts the location in which said concave 30b ****s in the installation location of said elastic fixture 30 inside [side-face] a case 1 at the periphery section of the front opening 7 parallel to the screen using the stop plate 31 which arranged two or more lateral protruding line 31a in the lengthwise direction at intervals of predetermined, It arranges so that all with the second location which contacts the screen of said plasma display panel 2 can be chosen. When choosing the first location which contacts the periphery section of the front opening 7 By pressing up of J characters 30c of the elastic fixture 30 ahead Since the elastic fixture 30 moves ahead by changing ahead said protruding line 31a of the partner whom used the elasticity of the U character part of said elastic fixture 30, and said concave 30b has stopped one by one The light filter (protection material) 4 supported by slot 30a of said elastic fixture 30 can move to the first location.

[0021] Moreover, when choosing the second location, by pressing by the front protection member 9 which does not illustrate a light filter 4, said elastic fixture 30 moves back and can move to the second location which contacts said screen of PDP2. In addition, it is necessary to set up so that each spacing of said concave 30b and said protruding line 31a and a location may be stopped in the first location and the second location.
[0022] Drawing 3 is important section sectional view (b) and top view (b) which show the fourth example of the plasma display equipment by this invention. In addition, the same part as drawing 1 attaches the same sign, and omits the overlapping explanation. Insertion hole 1c which leads to said space 8 is prepared in side-face 1b of said case 1, and said light filter 4 and the space between said PDP (s)2 are inserted and equipped with tabular shock absorbing material 40 via said insertion hole 1c. In this invention, since PDP2 is supported with shock absorbing material 40, it can prevent that PDP2 collides with a light filter 4.
[0023] moreover, as a guide apparatus of the path 41 which inserts tabular shock absorbing material 40 via said insertion hole 1c Since abbreviation etc. was in the width of face of said insertion hole by carrying out and 1f of 1 set of projections was installed at spacing, respectively inside the case 1 of the first location of 1d between the front openings 7 of said insertion hole 1c and said case 1, and second location 1e of the point symmetry about the core of said front opening 7 The location of the shock absorbing material 40 which 1f of said projections guided and was inserted in the right-and-left (width) direction is stabilized in the mid gear of the vertical (length) direction of the front opening 7.
[0024] Moreover, since 1g of closing motion doors was prepared in said insertion hole 1c, invasion of the dust when not inserting shock absorbing material 40 etc. can be prevented. In addition, the example which makes a guide apparatus the vertical direction of said case 1, and inserts shock absorbing material 40 in the vertical (length) direction has the same operation as this example, and effectiveness.
[0025]
[Effect of the Invention] As explained above, near the center of PDP etc. collides with a light filter, and this invention offers the plasma display equipment which reduced a possibility that the front windshield of the screen of PDP might be damaged, when the accident which drops front opening downward generates the case of a packing condition at the time of conveyance. therefore, cost -- it is simple and packing at the time of the conventional conveyance can be miniaturized -- it can contribute cheap.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the important section sectional view and important section enlarged drawing showing one example of the plasma display equipment by this invention, and is important section enlarged drawing (b) which shows condition (b) which arranges protection material in the second location which contacts the screen, the condition which arranges protection material in the first location which contacts the periphery section of front opening, and elastic anchoring equipment.
[Drawing 2] They are important section sectional view (b) which shows the second example of the plasma display equipment by this invention, and important section sectional view (b) which shows the third example.
[Drawing 3] It is important section sectional view (b) and top view (b) which show the fourth example of the plasma display equipment by this invention.
[Drawing 4] It is sectional side elevation (b) by the A-A' view of an important section front view (b) and (b) Fig. which shows one example of the conventional PDP.
[Drawing 5] It is an image Fig. explaining breakage by the impact of the fall in the packing condition of the conventional PDP.
[Description of Notations]
1 Case
1a Insertion hole
1b Side face
1c Insertion hole
1d The first location
1e The second location
1f Projection
1g Closing motion door
2 Plasma Display Panel (PDP)
3 Frame
4 Light Filter (Protection Material)
5 Projection
6 Plasma Display Equipment
7 Front Opening
8 Space
9 Front Protection Member
10 Elastic Anchoring Equipment
10a Boss
10b Support
10c Elastic member
10d Bolt
20 Elastic Member

30 Elastic Fixture
30a Slot
30b Concave
30c The upper part of J characters
31 Stop Plate
31a Protruding line
40 Shock Absorbing Material
41 Path

[Translation done.]